

Claims

- [c1] 1. A method for automatically scanning at least a channel of a received signal comprising:
 - scanning a plurality of frequency bands; and
 - analyzing each frequency band to determine if the frequency band holds the received signal, if it does:
 - detecting a frequency response of the received signal;
 - and
 - detecting a characteristic of a channel according to the frequency response of the received signal;
 - wherein the received signal corresponds to the channel.
- [c2] 2. The method of claim 1 wherein frequency ranges of the plurality of frequency bands are different.
- [c3] 3. The method of claim 1 wherein bandwidth of each frequency band is the same.
- [c4] 4. The method of claim 1 wherein the characteristic of the channel at least comprises an edge frequency of the channel, a carrier frequency of the channel, and a symbol rate of the channel.
- [c5] 5. A receiver for automatically scanning at least a channel of a received signal comprising:

a tuner for scanning a plurality of frequency bands in sequence;

a signal detecting unit for analyzing each frequency band to determine if the frequency band holds the received signal;

a spectrum analyzer for detecting a frequency response of the received signal; and

a channel-parameter detecting unit for detecting a characteristic of the channel according to the frequency response of the received signal;

wherein the received signal corresponds to the channel.

- [c6] 6. The receiver of claim 5 wherein frequency ranges of the plurality of frequency bands are different.
- [c7] 7. The receiver of claim 6 wherein the tuner further comprises a mixer, and the tuner determines the plurality of scanned frequency bands according to a scan frequency of the mixer.
- [c8] 8. The receiver of claim 7 wherein the receiver further comprises a control circuit for controlling the scan frequency of the mixer according to the received signal.
- [c9] 9. The receiver of claim 5 wherein the signal detecting unit further comprises an auto-gain controller for adjusting a signal gain of the receiver, and the signal de-

tecting unit detects whether the frequency band holds the received signal according to the signal gain.

- [c10] 10. The receiver of claim 5 wherein the spectrum analyzer further comprises:
 - an adjustable down-converter for scanning and detecting energy magnitudes of the received signal corresponding to a plurality of frequencies by adjusting an operating frequency;
 - an average unit for averaging the energy magnitudes of the received signal corresponding to the plurality of frequencies; and
 - a magnitude analysis generator for erasing phase of the received signal to acquire the frequency response of the received signal.
- [c11] 11. The receiver of claim 10 wherein the average unit is a low-pass filter.
- [c12] 12. The receiver of claim 10 wherein the receiver further comprises a control circuit for controlling the operating frequency of the adjustable down-converter according to the frequency response of the received signal.
- [c13] 13. The receiver of claim 5 wherein the channel-parameter detecting unit further comprises:
 - a signal processing module for processing the frequency

response of the received signal; and
a channel-parameter detecting circuit for determining
the characteristic of the channel according to the pro-
cessed frequency response of the received signal.

- [c14] 14. The receiver of claim 13 wherein the signal process-
ing module at least comprises:
 - a low-pass filter; and
 - a high-pass filter respectively coupled to the low-pass
filter and the channel-parameter detecting circuit.
- [c15] 15. The receiver of claim 5 wherein the characteristic of
the channel at least comprises an edge frequency of the
channel, a carrier frequency of the channel, and a symbol
rate of the channel.
- [c16] 16. The receiver of claim 5 wherein the receiver further
comprises a channel scan/control circuit for controlling
the tuner to scan the plurality of frequency bands in se-
quence.